

Claims;

1. A pipe probing apparatus comprising a running member which moves forward and backward in a cylindrical pipe while pulling a cable and which includes a camera with a lens, the pipe probing apparatus being characterized in that said running member is provided with a link mechanism that uses an elevating and lowering adjust means to integrally elevate and lower said camera and a radar device located above the camera.

2. A pipe probing apparatus according to Claim 1, characterized by being provided with pivoting arm members that independently elevate and lower said radar device, and in that while the pivoting arm members are kept contracted, said elevating and lowering adjust means simultaneously elevates said camera and said radar device, and when said camera is positioned in a center of a pipe, said radar device has not abutted against an upper inner surface of the pipe yet but is located inside said pipe.

3. A pipe probing apparatus according to Claim 1 or Claim 2, characterized in that said radar device has a radar box main body and guide rollers each disposed in a front or rear of each of a right and left sides of the box main body, and when said radar device is elevated, said guide rollers first abut against the upper inner surface of the pipe, so that said radar box main body does not abut against the upper inner surface of the pipe.

4. A pipe probing apparatus according to (any one of Claim 1 to Claim 3,

characterized in that urging members are disposed on said pivoting arm members to press said radar device against the upper inner surface of the pipe, and are used to always elevate said radar device, and a stopping member is disposed to stop the elevation of said radar device.

5. A pipe probing apparatus according to Claim 4, characterized in that said stopping member is formed by a winding roller rotatively driven by a motor disposed in the radar box main body and a wire which has one end secured to the running member and which is wound around said winding roller, in that winding up said wire lowers the radar device, loosening said wire causes said urging member to elevate the radar device to elevate, and stopping driving of the motor stops the elevating or lowering operation of said radar device.

6. A pipe probing apparatus according to any one of Claims 1 to 5, characterized in that a video obtained by said camera with the lens can be viewed using a monitor installed on a ground, and the elevation and lowering of said radar device can be controlled from the ground.

7. A pipe probing apparatus comprising a running member which moves forward and backward in a cylindrical pipe while pulling a cable and which includes a camera with a lens, the pipe probing apparatus being characterized in that a radar device is disposed above the running member so as to elevate and lower freely via pivoting arm members, and the pipe probing apparatus comprises a first sensing member that senses an elevating end of the radar device and a second sensing member that senses a lowering end of the radar

device, and when each of the sensing members senses the corresponding end, elevation or lowering of said radar device is stopped.

8. A pipe probing apparatus according to Claim 7, characterized in that said radar device has a radar box main body and guide rollers disposed in a front and rear portions of each of a right and left sides of the box main body, and when said radar device is elevated, said guide rollers first abut against the upper inner surface of the pipe, so that said radar box main body does not abut against the upper inner surface of the pipe.

9. A pipe probing apparatus according to Claim 7 or Claim 8, characterized in that urging members are disposed on said pivoting arm members to press said radar device against the upper inner surface of the pipe, and are used to always elevate said radar device, and a stopping member is disposed to stop the elevation of said radar device.

10. A pipe probing apparatus according to Claim 9, characterized in that said stopping member is formed by a winding roller rotatively driven by a motor disposed in the radar box main body and a wire which has one end secured to the running member and which is wound around said winding roller, in that winding up said wire lowers the radar device, loosening said wire causes said urging member to elevate the radar device, and stopping driving of the motor stops the elevating or lowering operation of said radar device.

11. A pipe probing apparatus according to Claim 10, characterized in that said first sensing member comprises upper lever members installed on said guide

roller section and limit switches that sense movement of the corresponding lever members, and when said radar device is elevated, said upper lever members first abut against the upper inner surface of the pipe, said guide rollers then abut against the upper inner surface of the pipe, and at the same time, said limit switches are activated to cause said stopping member to stop said radar device.

12. A pipe probing apparatus according to Claim 11, characterized in that said second sensing member comprises lower-end sensing lever members installed on said respective pivoting arm members and limit switches that sense movement of the corresponding lever members, and when said radar device is lowered to the lowering end, said lower-end sensing lever members are first moved by said pivoting members to activate said limit switches to cause said stopping member to stop said radar device.

13. A pipe probing apparatus according to any one of Claims 7 to 12, characterized in that a video obtained by said camera with the lens can be viewed using a monitor installed on a ground, and the elevation and lowering of said radar device can be controlled from the ground.